

Report for 2005OR73B: Development of a web-based database of hydrologic data for the Upper Oak Creek Watershed

Publications

- There are no reported publications resulting from this project.

Report Follows

1. Title:
Development of a web-based database of hydrologic data for the Upper Oak Creek Watershed
2. Principal Investigators and Organizations:
Dr. Arne Skaugset, Associate Professor, Department of Forest Engineering, College of Forestry, Oregon State University, Corvallis, Oregon.
3. Study Duration:
Initiation Date: July 1, 2005
Scheduled Completion Date: June 30, 2006
4. Research Objectives:
The objectives of the project include:
 - 1) To create an internet-available database to provide non-proprietary data collected in the Upper Oak Creek Watershed in the MacDonald-Dunn Forest since 2001. Data include water discharge, precipitation, and weather data;
 - 2) Make available on the database, proprietary data collected from the Upper Oak Creek Watershed as it becomes published. Data will include discharge data from culverts and sediment yields from culverts and watershed boundary.

This project is being carried out in the Upper Oak Creek Watershed of the McDonald-Dunn Research Forest of the College of Forestry at Oregon State University. A historic stream gauging structure is installed at the boundary of the school forest and all of the research takes place upstream of that structure. The area of the Oak Creek Watershed upstream of the gauging structure is 8.24 km². There are 4.57 km of road in the Oak Creek Watershed and there are 98 culverts installed on that length of road. Discharge is measured at the stream gauging structure at Oak Creek at the forest boundary and all culverts in the watershed. A meteorological station measures wind speed, solar radiation, air temperature, and relative humidity in the watershed. There are four tipping bucket rain gauges to measure rainfall intensity throughout the watershed.

5. Research accomplishments from this study:

A database for the hydrology of the Upper Oak Creek Watershed was created and consists of the following data:

- 1) Precipitation data summarized into hourly measurements from 2002-2005 for four rain gauges located spatially throughout the MacDonald-Dunn portion of the watershed.
- 2) Climatology data from 2003-2005 including air temperature, wind speed and direction, photosynthetically-active radiation (PAR), and relative humidity measurements at 10-minute intervals.

- 3) Water discharge measurements from the Oak Creek gauging station at the forest boundary from 2001-2005 at 10-minute intervals.
- 4) Metadata characterizing the site location, data collection methods, and data processing tools.
- 5) As proprietary data from the watershed is published, it will be added to the database overtime. Data sets will likely include sediment yield from road segments and the forest boundary and discharge (runoff) from individual road culverts.

The database will be housed on the data website (<http://www.fsl.orst.edu/lter/data/abstract.cfm?dbcode=HF022&topnav=97>) of the H.J. Andrews Experimental Forest Long Term Ecological Research with other hydrologic data. The study code for the database is HF022. It will be available on-line after approximately July 15, 2006. To reach the broadest audience, the database will be linked from the Oregon State University Forest Engineering webpage (<http://www.cof.orst.edu/cof/fe/researchgroups.php>) and the Oak Creek Website (<http://water.oregonstate.edu/oakcreek/index.htm>).

6. Non-technical summary of the potential impact of this research
The primary benefit from this study will be to support teaching and research in the Oak Creek Watershed by making available commonly used and requested data.